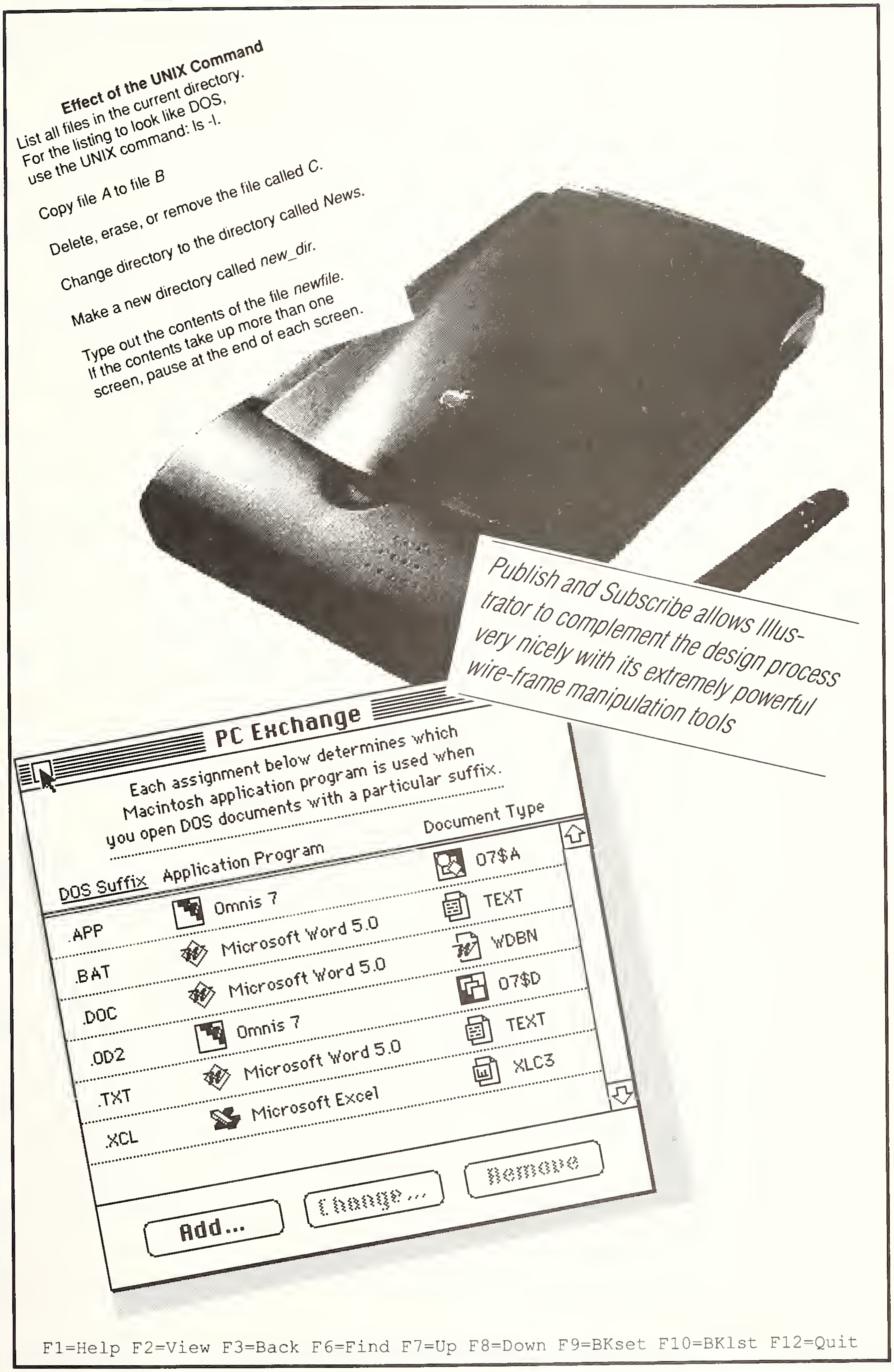
university of toronto
computing services

Computer News



Effect of the UNIX Command
List all files in the current directory.
For the listing to look like DOS,
use the UNIX command: ls -l.

Copy file *A* to file *B*

Delete, erase, or remove the file called *C*.

Change directory to the directory called *News*.

Make a new directory called *new_dir*.

Type out the contents of the file *newfile*.
If the contents take up more than one
screen, pause at the end of each screen.

Publish and Subscribe allows Illustrator to complement the design process very nicely with its extremely powerful wire-frame manipulation tools

PC Exchange

Each assignment below determines which Macintosh application program is used when you open DOS documents with a particular suffix.

DOS Suffix	Application Program	Document Type
.APP	Omnis 7	07$A
.BAT	Microsoft Word 5.0	TEXT
.DOC	Microsoft Word 5.0	WDBN
.OD2	Omnis 7	07$D
.TXT	Microsoft Word 5.0	TEXT
.XCL	Microsoft Excel	XLC3

```
F1=Help F2=View F3=Back F6=Find F7=Up F8=Down F9=BKset F10=BKlst F12=Quit
```

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Thanks to Elizabeth Rayson and Wendy Schaffer for their assistance in editing this issue.

This newsletter was entirely produced on a Macintosh using PageMaker and other related Macintosh software.

Computers Across the Curriculum:

A Conference on Technology in the Freshman Year

May 29-31, 1992 New York City

Lidio Presutti
lidio@vm.utcs.utoronto.ca

Recently, I attended a conference on "Technology in the Freshman Year" to gain a wider view as to how the Instructional Technology Support group at UTCS could help U of T faculty integrate some of the new instructional technology within their classrooms. The purpose of the conference was to "highlight innovative approaches to incorporating state of the art computer technology into curriculum and pedagogy." Its target audience was "faculty, administrators, and researchers in higher education."

Keynote Address

The most interesting part of the conference was the keynote address by Allan Kay, the creator of the popular concept of overlapping windows, and of the SmallTalk programming language. It was titled "Point of View is Worth 80 IQ Points." He had much to say about how people see new technological advances.

He pointed out that when there is an advance in technology, American industry rushes out to automate the old, when they should be trying to create new applications with the new technology. Consequently, when new applications are identified, they have too much invested in the old, making it difficult to adapt and convert. This, he said, is happening with multimedia and education today.

He felt that today's schools fail to teach students how to think. To remedy this, he encouraged educators to "amplify" the human drives. To demonstrate what he meant by this, he used the analogy of a musical instrument. Just as a musical instrument (such as a piano) serves as an amplification of music, a computer should serve as an amplification of the thinking process of students.

Vendor Showcases

There were showcases by various vendors, among them IBM and Apple. IBM demonstrated two products: Illuminated Books & Manuscripts, and a beta-test version of the Columbus Discovery video discs. These were displayed on IBM's Ultimedia platform. Both products can be extended by adding new texts to the hard disk and combining them with material supplied on the video discs. The Illuminated Books & Manuscripts is a large multimedia database dealing with five major text works in different literary genres: Ulysses (poetry), Hamlet (drama), US Declaration of Independence (political treatise), Black Elk Speaks (novel), and a Letter From Birmingham Jail (personal letter). It provides sophisticated functions for displaying and interacting with media elements in video, text, graphics, and audio form.

Apple demonstrated a number of examples of the use of QuickTime. However, many attendees were impressed by a very creative HyperCard stack called "Exotic Japan" developed by, as the Apple representative put it, a "Canadian Professor" (it was created by Nikki Yokokura, who was also part of the Apple Research Partnership Program at U of T). It provides various animations of Japanese words and customs. Most interesting was an animation for the word "exit", showing a man jumping from a burning building. The illustration is accompanied by fire engine sound effects. As the figure reaches the ground, it is replaced by an image of a stick figure of a man with his arms raised, and then transformed into the Japanese symbol for exit, accompanied by its pronunciation.

Session Highlights

The session by Ian Miller of Wright State University on the "The Use of an IBM-based Computer-Aided Multimedia System in Large Freshman General Education Classes" was instructive. Miller was faced with the task of teaching about 300 students introductory biology, and keeping them interested while teaching in what is often an impersonal classroom environment. He used his multimedia computer in the lecture hall to introduce digital images, graphics, audio, and text. Principally, he presented his lecture notes through his computer and displayed them on a large screen. This made them easier for students to see and read, as well as saving him time by enabling him to reuse the notes. Another technique he found successful was adding thirty seconds of cartoon commercials (which he created himself) to the regular class lectures. These commercials dealt with biological principles unrelated to the content of the individual class lectures, but relevant to the content of the course as a whole. Later, when he quizzed the students, he was pleasantly surprised to find a 97% correct response on true/false questions dealing with material presented only in the commercials.

Miller also related the feeling that he gets when he watches a favourite television program—*Star Trek: The Next Generation.* He observed that when the program begins, it always starts with recognizable theme music and images, making him eager to experience the new worlds to which he will be introduced. Because he wanted to have his biology students experience the same type of expectations about his course, he selected a favourite popular song and took various digital pictures of students as they entered the classroom and created an opening sequence for the course. He observed that students were more interested in attending the class, enjoyed seeing themselves up on the "big screen", and, in general, were more attentive.

Another interesting session was "Calculus and Mathematica" by J.J. Uhl of the University of Illinois. The Department of Mathematics at the university has decided to restructure the first and second year calculus program by developing electronic interactive texts for both courses. They have done away with lectures and presentations, and replaced them with group discussions. Students are given the electronic interactive texts called workbooks, which contain basic math principles and exercises, as well as a section that allows students to "give it a try". In this section, Mathematica produces results from sample programs. For many of the exercises, students are required to give explanations for visual results instead of doing proofs. The Department of Mathematics has made the Mathematica programs accessible, so that students can change parameters and experiment on their own. The electronic interactive texts will be published by Addison-Wesley.

Conclusions

This article describes only a few of the sessions available at the conference. I have not included descriptions of some of the other sessions because a number of these were remedial in nature, and therefore not useful for instructors at the university level. Those sessions that I did attend, however, were both relevant and instructive, and I would enjoy discussing them with you if you are interested. You can telephone me at 978-5130, or contact me via electronic mail at *lidio@vm.utcs.utoronto.ca*.

Microcomputer Short Courses

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rosiecki@vm.utcs.utoronto.ca

UTCS offers various noncredit microcomputer courses to faculty, staff, and graduate students of the University of Toronto. These courses cover a number of software programs available for the PC or the Macintosh. Whether you will be typing a thesis on a word processor, or working with spreadsheets, databases, or desktop publishing, we may be able to help you get started.

Our class sizes are small to allow for much individual attention. In most cases, continuing support is available upon completion of a course.

To find out about course dates and registration procedures, or to book a place in any of these courses, please contact Irene Rosiecki at 978-4565. Courses are filled on a first-come, first-served basis. The more popular courses fill up quickly, but waiting lists are maintained in case of cancellations.

The following is a list of the microcomputer courses taught at UTCS:

- Introduction to dBASE IV
- Introduction to Disk Operating System (DOS)
- Electronic Mail Seminar
- Introduction to Microsoft Excel on the Macintosh
- Introduction to FoxBASE+/Mac 2.0
- HyperCard Seminar
- Introduction to Lotus 1-2-3
- Introduction to PageMaker
- ProComm Communications Seminar
- Introduction to SAS on the PC
- Intermediate SAS - Data Processing
- Intermediate SAS - Statistics
- SAS/Graph Seminar
- Introduction to Microsoft Word on the Macintosh
- Introduction to WordPerfect 5.1
- Advanced WordPerfect 5.1 Topics

MacWorld Boston 1992

Dariusz Dabek
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The August MacWorld Exposition attracted approximately 45,000 Macintosh enthusiasts to a very humid Boston, Massachusetts. As an added bonus this year, the Toronto Blue Jays were in town playing against the Boston Red Sox. (One of the local vendors, Shiva, showed us a pre-release version of their network access device, Lan/Ranger, and during the demonstration kept telling us the Blue Jays' prospects for the pennant.)

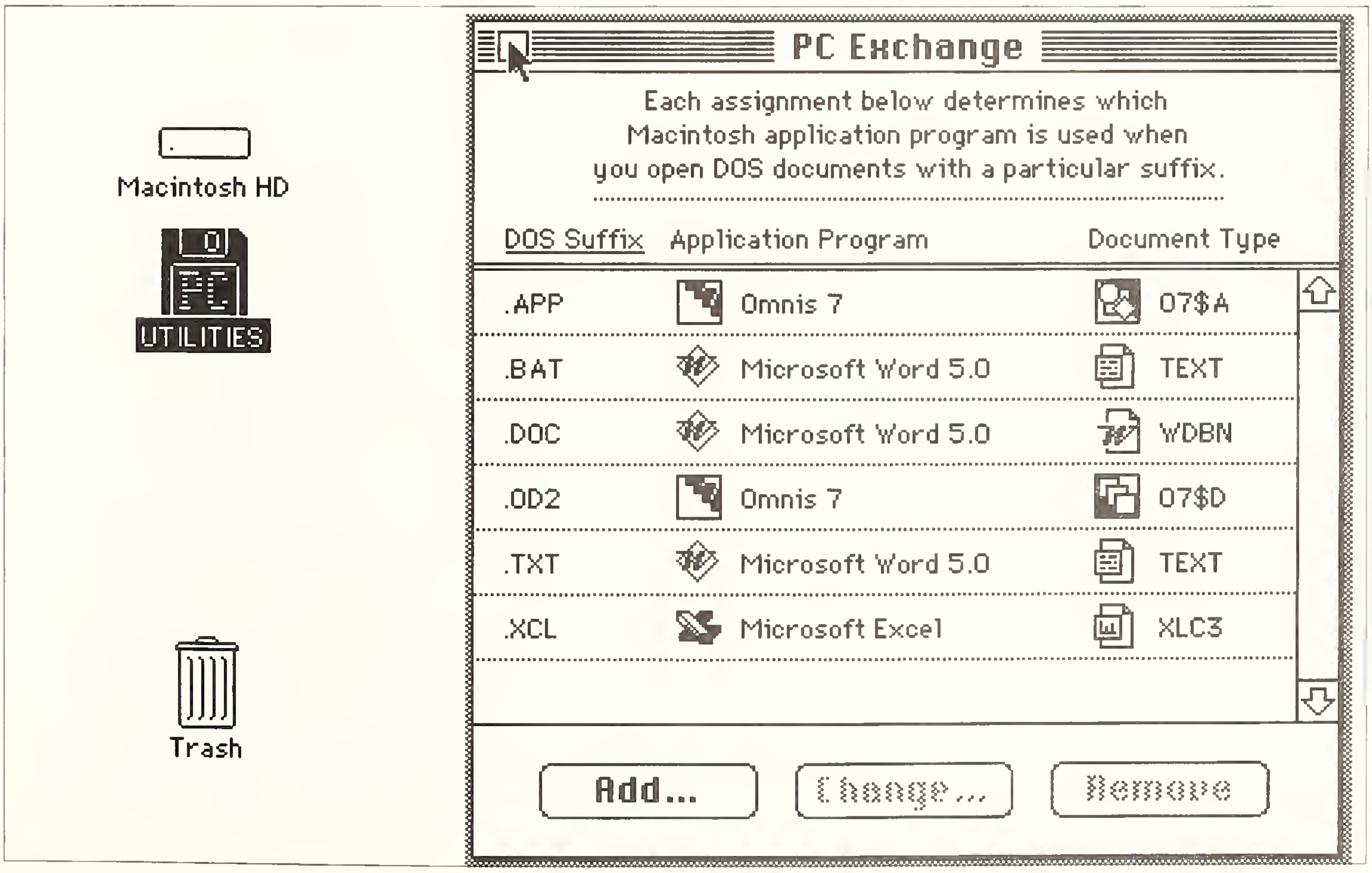
Outside of baseball, the show offered the usual hype and Hollywood-style glitz, aided by its very own QuickTime movie festival, and some sneak previews of upcoming technology off the show floor. PowerBooks, plus a raft of software additions and hardware peripherals were also out in full force.

This year each attendee received a MacWorld EXPO-CD, a collection of showcase applications and utilities provided by participating vendors. Other vendors handed out their own demonstration CD-ROMs, much like they used to distribute regular floppy diskettes.

New Offerings

Apple Extensions—Apple Computer showed off some of its new

Figure 1: PC Exchange lets your Macintosh read a PC diskette (below left); the PC Exchange window (below right).



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DOS Suffix	Application Program	Document Type
.APP	Omnis 7	O7$A
.BAT	Microsoft Word 5.0	TEXT
.DOC	Microsoft Word 5.0	WDBN
.OD2	Omnis 7	O7$D
.TXT	Microsoft Word 5.0	TEXT
.XCL	Microsoft Excel	XLC3

commercial extensions (i.e. these were not free, like most of the Apple System software and extensions have been in the past). **PC Exchange** is a system extension that allows Macintosh computers to manipulate MS-DOS diskettes as if they were Macintosh diskettes. When you insert an IBM diskette into the Macintosh, an icon of a diskette with the letters "PC" appears on the desktop. You can double click the diskette to see its contents. Special options allow you to associate certain DOS extensions with corresponding Macintosh programs. For example, you can decide that all files ending with XCL will be opened by Microsoft Excel, or that all files ending with DOC will be opened by Microsoft Word. When you open the diskette and the Macintosh finds these types of files, PC Exchange will assign a proper icon to them. When you double click the file's icon, the correct Macintosh application will be launched—a very handy feature for people who have to work with PC files often.

Another systems extension offered by Apple was **AtEase**. Those with older Macintoshes may remember it as the Mini-Finder. AtEase creates a full-screen card with icons that represent your favorite programs. You launch your programs by double clicking the appropriate icons. AtEase basically isolates you from the full Macintosh Finder; that is, you will not see any folder icons or disk icons. This utility is useful for Macintoshes in access-controlled environments such as public labs or classrooms, or Macintoshes that are accessible to small children who might want to put all the icons on the hard disk into the trash at once. Parents with small children, and administrators of large labs or classrooms, might find it useful.

> *Publish and Subscribe allows Illustrator to complement the design process very nicely with its extremely powerful wire-frame manipulation tools*

System 7—System 7 features appear to be slowly making their way into applications. ExMachina showed an improvement to the **NotiFy!** pager. NotiFy! works by sending personal pager messages through a modem to the paging company's central computer. In addition to AppleEvents, which allows you to exchange information with other programs on the network, the current version now includes gateways for sending pages from QuickMail and Microsoft Mail.

Infinity—**Infinity-2,** a 3D rendering program, now allows you to render objects created in Adobe Illustrator through its Publish and Subscribe capability. Each time the design is changed in Illustrator, the changes will be reflected in Infinity-2. Since Infinity-2 is weak in wire frame creation and editing, Publish and Subscribe allows Illustrator to complement the design process very nicely with its extremely powerful wire-frame manipulation tools. This is one of the first useful applications of System 7's Publish and Subscribe feature. We can only hope that other vendors will begin to cooperate and create more mutually complementary applications.

Informed Designer and Informed Manager—Shana, a Canadian company, teamed up with Accountant, Inc. to create an extension to Accountant's very user-friendly accounting application, **Accountant Inc.** Shana's **Informed Designer** and **Informed Manager,** electronic forms software packages, communicate with Accountant Inc. to create custom forms for entering data into its ledgers.

QuickTime

At last year's MacWorld Expo in Boston, SuperMac Technologies and Adobe joined forces to offer the wildly popular combination of **VideoSpigot** and **Adobe Premier.** This year, independent of each other, they both came back with improvements.

SuperMac showed off two items, a new and improved software compressor for QuickTime that allows bigger and faster movies with the standard QuickTime set; and the Digital Film board, which allows full-screen full-motion movies on the Macintosh IIci and up.

Adobe showed **Premiere 2.0.** The most interesting features included the edit list, SMPTE (Society for Motion Picture and Television Engineers) time coding, and the ability to export "film strips" into PhotoShop for frame-by-frame touch up.

Radius demonstrated **VideoVision,** a device that allows output of flicker free, 24-bit colour QuickTime movies to a VCR. This is accomplished by using a print-to-video menu command.

Databases

4th Dimension 3.0—New from Acius, **4th Dimension 3.0** made its official debut in Boston. The new version offers a multitasking kernel that allows developers to import multiple files, print several reports, and manage many different windows simultaneously. (The pre-release version of the 4D-Server application was shown for the nth consecutive MacWorld, but who is counting.)

FileMaker Pro 2.0—Claris showed **FileMaker Pro 2.0.** The new version offers improved speed, plus a few new commands and scripting options, but its big feature is its seamless compatibility with the Windows equivalent. A demonstration showed FileMaker Pro 2.0 from Windows accessing data on the Macintosh. The screens looked exactly the same on both platforms, which was rather impressive. When the demonstrator used the Macintosh to log on to the PC and to open the PC file, the FileMaker Pro 2.0 template in the PC format was converted to Macintosh format on the fly. The graphics, colours, and

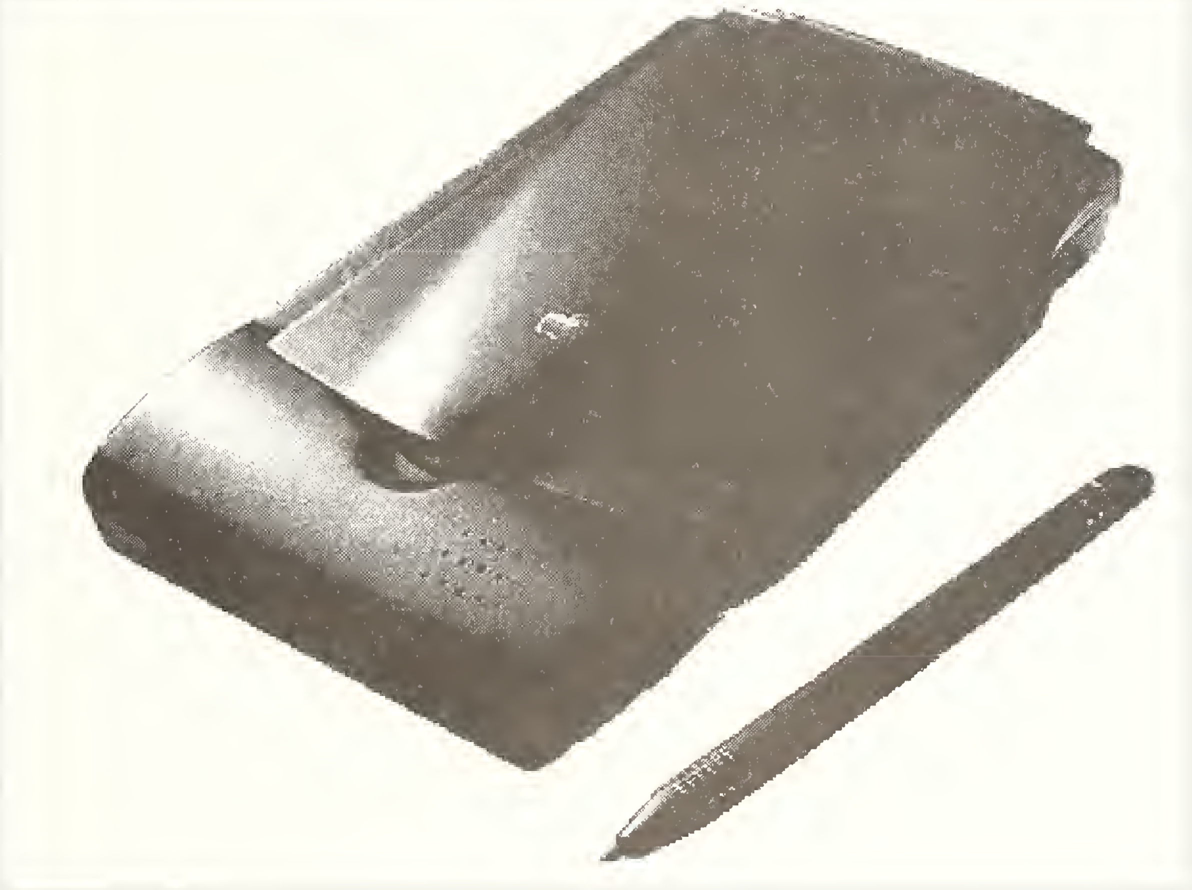

Figure 2: Newton, Apple's Personal Digital Assistant

fonts from the Windows version were all preserved during this on-the-fly conversion.

Helix Express—Double Helix showed off the new version of its database package, **Helix Express.** Helix Express includes support for a field type called "Document." The "Document" field allows systems designers to create databases that can contain other Macintosh documents in their native formats. Helix offers a sophisticated documents and work flow management system based on this capability. This feature is not available in any other Macintosh databases at this time.

Personal Digital Assistants (PDA)

Newton, Apple's Personal Digital Assistant, attracted a great deal of attention even though it was not shown live. Apple continuously ran a video showing Newton in everyday situations. As the narrator's voice pointed out, "the goal in designing Newton was to help users do the kind of information processing most people do most often: 'jot, sketch, scribble, figure, doodle and make lists; clean up, capture, and file such jottings; and route them to others, via fax, phone or electronic mail.'"

When asked about this PDA, Apple personnel staffing the booth emphasized that Newton is not a computer, and that each device might be tailored for special purposes. The prototype combination shown was the NotePad, but you can look forward to others such as "speak and spell" or an interactive "magnet-holding-a-note-on-the-fridge" communications centre (in my house the communications centre consists of magnets and paper on the refrigerator door).

Apparently, the first type of PDA will be a daytimer-type device for maintaining appointments, schedules, and addresses. It will be able to share data with the Macintosh. Most vendors offering Macintosh-based organizers hinted that they will be adding Newton communications capabilities to future versions of their products.

For more information on these products contact Dariusz Dabek at 978-6878, or by electronic mail at *dabek@utcs.utoronto.ca.*

"I can do things with DOS, but how do I get started with my new UNIX account?"

Ask Advising

An Introduction to UNIX for the Experienced DOS User

Some basic UNIX commands are similar to DOS commands, and can be easily learned by the user who is already familiar with DOS. The UNIX commands discussed in this article are basic file management commands, which (in both systems) follow the same concepts of files and directories.

Table A (below) shows some of the more common commands on the University of Toronto GPUNIX (General Purpose UNIX) system, with their PC DOS equivalents.

Notes: Words in *italics* are arbitrary file and directory names. <Return> means that you must press the Enter or Return key on your keyboard.

Table A

DOS Command	Comparable UNIX Command	Effect of the UNIX Command
dir <Return>	ls <Return>	List all files in the current directory. For the listing to look like DOS, use the UNIX command: ls -l.
copy *A B* <Return>	cp *A B* <Return>	Copy file *A* to file *B*
del *C* <Return>	rm *C* <Return>	Delete, erase, or remove the file called *C*.
cd *News* <Return>	cd *News* <Return>	Change directory to the directory called *News*.
mkdir *new_dir* <Return>	mkdir *new_dir* <Return>	Make a new directory called *new_dir*.
type *newfile* | more <Return>	cat *newfile* | more <Return> **-OR-** more *newfile* <Return>	Type out the contents of the file *newfile*. If the contents take up more than one screen, pause at the end of each screen.

Table B

*Beware! Some UNIX commands are **not** like DOS commands!*

DOS command	Effect	UNIX Command	Effect
cd \ <Return>	Changes directory to your home directory.	cd <Return>	Changes directory to your home directory.
cd <Return>	Tells you the name of the directory you are in	pwd <Return>	Tells you the name of the directory you are in ("**p**rint **w**orking **d**irectory").
del * <Return>	Deletes files called: *file1, abcde*. Does not delete files called: *file1.exe, file2.com*, or any other files with extensions.	rm *	Deletes files called: *file 1, abcde*. Also deletes files called: *file1.exe, file2.com*, or any other files with extensions.
del ABC* <Return>	Deletes files called: *ABC, abc, ABC* and *abcde*. Capitalization does not matter. It's the same as typing del *abc**, del *AbC**, and any other upper/lower case combinations.	del ABC* <Return>	Deletes files called: *ABC, ABCde*, and *ABCDe.TXT*. Does not delete files called: *abc, aBCde*, or any cases where the case of the letters does not match.

We have just shown how UNIX can do many file management tasks that DOS can do. However, there are other things available on UNIX such as multitasking and networking. Examples of network tools are electronic mail, news (rn), and access to databases and other computer systems (see *ComputerNews* May/June 1992, as well as upcoming issues of *ComputerNews* for more information).

... But Where Can I Get Help on UNIX?

Although you can get by with the general overviews provided in *ComputerNews*, it is extremely helpful for the new user to buy an introductory UNIX book. UNIX books are available at the University of Toronto Bookstore in the Koffler Centre, 214 College St. Good UNIX manuals explain concepts behind the system which help the user navigate the system effectively. After you get a general feel for the UNIX system, the reference materials in UNIX itself are helpful.

For help in getting connected to GP UNIX, you can get two free pamphlets from UTCS Advising, "Accessing University of Toronto Services through ProComm" and "Accessing UTCS GP UNIX Service." These pamphlets describe how to connect your PC running DOS to GP UNIX. Information is also available on connecting with your Apple Macintosh; call us at 978-HELP between the hours of 12:00 noon and 6:00 p.m. weekdays for assistance.

?, h, and help

In general, typing "?" or "h" or "help" can produce a help screen in a UNIX program. For example, typing "mail" to enter the mail program and then "?" at the mail prompt produces a screen listing commands that you may use in mail.

Another example is "kermit" to enter the Kermit program (for transferring files). Typing "?" at the Kermit prompt produces a list of commands which can be used in Kermit, including the HELP command. When using "more" (mentioned above) for viewing lengthy files, typing "?" shows useful commands such as "q" for QUIT.

The UNIX "man" Pages

The UNIX manual pages can be accessed by the UNIX MAN command. By typing "man" followed by any UNIX command, you can access the users' manual page(s) for that command. The exact command may be found by using the "man -k" option. The following examples demonstrate this:

man man	Display the manual pages for the MAN command.
man ls	Display the manual pages for the LS command. Here you can find out, for example, about "ls -l" which was mentioned above.
man csh	Display the manual page on the c-shell. This contains much useful general information.
man -k mail	Display a list of all the UNIX commands which have the keyword "mail" in them. To look specifically at the MAIL command, type in: "man mail".

rn

There are also good references in UNIX news groups. You can read news with the RN command, or scan for a specific topic by typing "rn <topicname>". For example, to read the news groups which discuss UNIX, type "rn unix".

mail

You can send electronic mail describing your problem or question to UTCS support staff, by running the MAIL command with one of the userids shown below, and then entering your message.

mail usg@gpu.utcs.utoronto.ca
mail advisor@gpu.utcs.utoronto.ca

For assistance in using electronic mail on GP UNIX, you can call Glenn Britton at 978-6346 or send mail to his electronic mail address: *britton@gpu.utcs.utoronto.ca.*

Files Available on GP UNIX

There are various files on GP UNIX which give further information. For example, to find out more about the INTERNET, do the following:

cd ~advisor/internet	change directory to the UNIX advisor's account
ls	see which files are in this directory
more rfc1118.txt	view the file called "rfc1118.txt" in the directory

Besides consulting the references mentioned above, keep reading *ComputerNews* for helpful UNIX tips. Watch for upcoming articles on further topics such as uploading and downloading files to and from your microcomputer.

Voice Mail Reminder: Tell Us About Your Department's Telephone Changes!

UTVC is aware that at this time of year, changes in office arrangements and telephone numbers occur frequently. It is very important that all departments keep us informed of any changes to telephone services, including the names of users. This is especially important for voice mail subscribers.

When UTVC creates a mailbox, the subscriber's name is part of the mailbox profile. The name is a point of reference to ensure that the mailbox and the telephone number are dedicated to a particular subscriber. This information also allows us to provide the "dial-by-name" function on voice mail. As a quick review, "dial-by-name" allows a caller to the voice mail system to spell the surname of the voice mail subscriber on the telephone keypad to reach the subscriber's mailbox. For example, if someone wanted to send a voice mail message to me, Debbie Stewart, and did not know my telephone number, he or she could phone the ASPEN system, record a message, and then send it to my voice mailbox by spelling "Stewart" on the telephone keypad.

Problems arise when UTVC is not informed of name changes. To continue with our example, let's say that our newsletter editorial assistant, Maureen Monné, inherited my existing telephone number and mailbox, 978-2324. Maureen would record a new personal greeting and name for the mailbox. If the IVMS system was not updated to reflect the new name for the mailbox on 978-2324, callers attempting to reach Maureen by using the "dial-by-name" feature would not be directed to her new 978-2324 mailbox. Further confusion would occur if callers were attempting to reach me using the "dial-by-name" feature. IVMS would route the caller to mailbox 978-2324. Before they could leave messages, they would hear the recorded greeting of the mailbox's new subscriber, Maureen Monné. You can imagine the bewilderment of callers, attempting to reach Debbie Stewart but being greeted by Maureen Monné.

If this appears to be confusing to you, you're right. But, it's even more confusing and frustrating to your caller. If your department is contemplating changes to telephone numbers, office arrangements, and voice mailboxes, have your departmental telephone coordinator contact us in writing to ensure the IVMS system is updated. If you have any questions or would like to discuss any voice communications related matters, call us at 978-4000.

Audioconferencing Has Arrived!!

UTVC has acquired an audioconferencing unit for loan to our customers. The NEC "VoicePoint" interactive audio teleconferencing equipment is a compact, full-duplex unit that enables users to allow more than one person in a room to participate in a phone call. Because the unit is full-duplex, any number of people can talk at the same time. Interrupting, overlapping voices are well defined and clearly transmitted to permit natural, open, and spontaneous conversation. Booming echo-chamber voices and shrill feedback tones associated with conventional speakerphones are eliminated.

The unit has been used to bring a guest lecturer in California to a small graduate class. The response from the guest lecturer, professor, and students was very positive. This technology also allowed librarians on campus to participate in a 61-site cross-country teleconference on copyrights.

To use VoicePoint, all that is required is a connection to a single-line Unity set. The equipment is ideally suited to small seminar or conference rooms. If you would like to borrow the equipment or arrange a demonstration, call us at 978-4000.

Debbie Stewart
Voice Communications

INTERNET NOTES

Introduction to Gopher

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MaryAnn Cervin-Lawry
maryann@vm.utcs.utoronto.ca

The INTERNET Gopher is a document search and retrieval system in which documents are held on a distributed network of hosts. The way in which documents and services are presented is modelled on the hierarchical file system. Users can browse through documents, directories, and services without needing to know where these items actually reside. Thus, a user at the University of Toronto can view a document residing on a host in Texas, for example, as easily as the same user can view a document kept locally.

The University of Minnesota is developing the Gopher client/server protocol as their Campus Wide Information System (CWIS, pronounced "kwiss"). Gopher has been implemented on a wide variety of systems, and installed at many locations on the INTERNET. Rick Troth at Rice University developed the VM/CMS version which has been installed at UTCS. We have installed this Gopher experimentally while we evaluate its usefulness here.

To use the GOPHER client on the VM/CMS system, issue the command:

☛ `gopher <Return>`

The root menu which will appear on your screen looks like this (it may have a few more items than what you see below):

```
CMS Gopher 2.3.0                                  vm.utcs.utoronto.ca
1/4
                       (root menu)

<document>  About Internet Gopher
<document>  Gopher at University of Toronto
<menu>      CA*net Traffic Statistics
<menu>      Other Gophers

F1=Help F2=View F3=Back F6=Find F7=Up F8=Down F9=BKset F10=BKlst F12=Quit
```

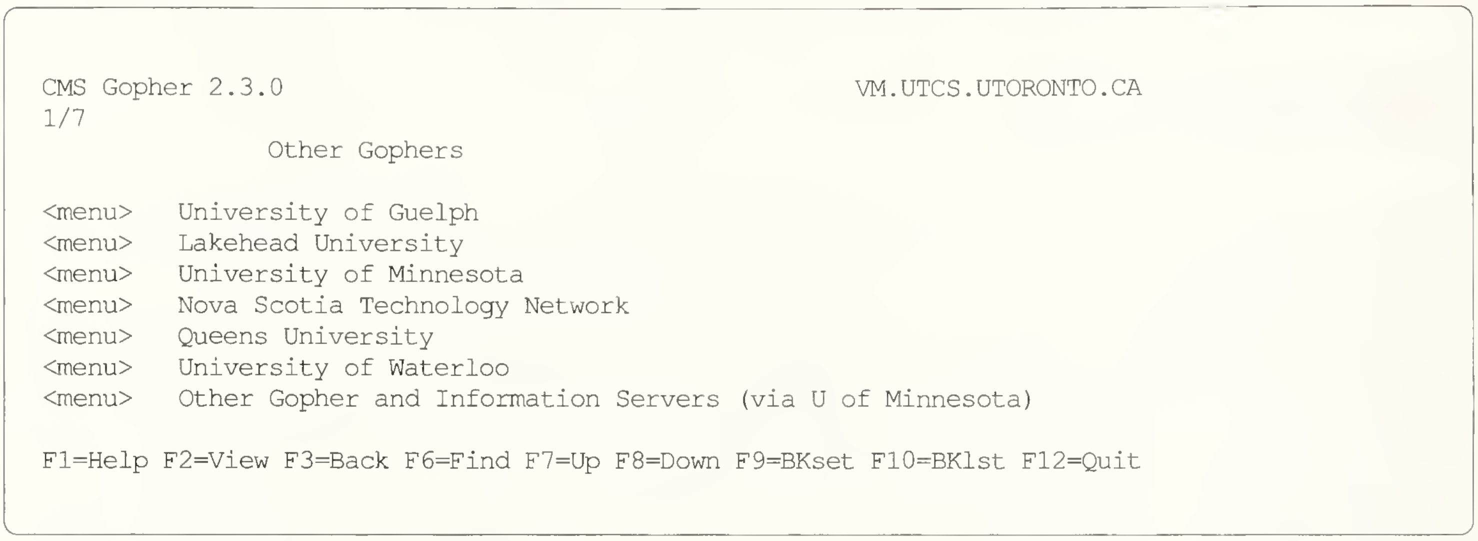
You will see the name of the host at the top right corner of the screen. You may notice this changing as you browse through Gopher directories.

The actions you can take are listed at the bottom of the screen. The first action you should take is to press the F1 key on your keyboard to issue the HELP command. After you have read the information that will get you started, press the F3 key to return to your initial screen (above). You can use the HELP command anywhere in Gopher.

At the time of writing, the documents available in the "CA*net Traffic Statistics" menu are the only documents that reside locally, apart from the two documents that introduce Gopher. We hope to add more in the future.

For the moment, then, the most interesting item in the root menu is the "Other Gophers" menu. Move the cursor to the line that says "Other Gophers" and press the F2 key to display a screen which may resemble the following (this menu will change frequently):

INTERNET NOTES



```
CMS Gopher 2.3.0                                          VM.UTCS.UTORONTO.CA
1/7
               Other Gophers

<menu>   University of Guelph
<menu>   Lakehead University
<menu>   University of Minnesota
<menu>   Nova Scotia Technology Network
<menu>   Queens University
<menu>   University of Waterloo
<menu>   Other Gopher and Information Servers (via U of Minnesota)

F1=Help F2=View F3=Back F6=Find F7=Up F8=Down F9=BKset F10=BKlst F12=Quit
```

You will find that there are direct links to Gopher installations at several Canadian universities, as well as a link to the University of Minnesota where Gopher was developed. If you are interested in viewing the Gopher protocol, lists of Gopher implementations (such as PC Gopher or MacGopher), or Gopher news, you will find it helpful to view the menu for the University of Minnesota. There is also a link to a list of all known Gopher servers on the INTERNET; the University of Minnesota maintains this list.

Although Gopher has proven very popular, it is still in the development phase. The developers welcome any comments and suggestions you might have. I would be happy to pass them on if you wish. You can also write to the Gopher development team yourself at *gopher@boombox.micro.umn.edu*.

More Gopher servers will become available in the future. If you have data you wish to share with others through the INTERNET, please contact Herb Kugel at one of the electronic mail addresses listed below and we can make it available through Gopher right now.

There might be other Gophers installed at the University of Toronto in addition to the one at UTCS. If you have such a Gopher and would like to establish a link between your Gopher server and our Gopher server, please contact Herb Kugel or MaryAnn Cervin-Lawry (*maryann@vm.utcs.utoronto.ca*) so that we can get our Gophers talking!

If you have any questions about Gopher or the INTERNET in general, please contact Herb Kugel at *herb@vm.utcs.utoronto.ca* or *herb@gpu.utcs.utoronto.ca*.

Project Gutenberg

Project Gutenberg is an ongoing project for the creation and distribution of great works of literature in electronic format. While there is already a considerable amount of material available through the INTERNET, the project welcomes new publications and will assist in making them available electronically to those who would like to receive them. If you are interested in either the transmission or the receipt of works of literature through electronic media, please contact Michael S. Hart, Director of Project Gutenberg, at the National Clearinghouse for Machine Readable Texts. His electronic mail address is *hart@vmd.cso.uiuc.edu.*

UNIX “Z” and “Tar” Files

In previous columns, I have discussed File Transfer Protocol (FTP) and how you can use this protocol in both the UNIX and the VM/CMS environments. While you can access and process any text or PostScript print file from VM/CMS, there are two classes of files available through FTP that you must process from the UNIX environment. These are the compressed files that are known as “Z” files, and the “tar”, or “tape archive files,” that are used for much more than just tape archives.

Since this is a new school year, we will illustrate how to use these two types of files by obtaining the *INTERNET Resource Guide* (IRG). Although we discussed the IRG during the winter term, it might be unfamiliar to some people arriving this year. (See “How to Obtain the INTERNET Resource Guide,” *ComputerNews*, January/February 1992.) An understanding of Z and tar files is very important for any in-depth use of the INTERNET, so I will elaborate on how they work after I illustrate how to use them as I obtain the IRG.

The IRG is a book that lists a very large number of INTERNET networks and defines information about these networks. It is a useful directory that is constantly being updated by its publisher, the National Science Foundation in the USA. You are urged to subscribe to these updates when you have obtained the IRG. (If you wish to subscribe to the updates, please contact Herb Kugel at the address at the end of this article.)

You can obtain the IRG through FTP, which allows you to access a remote machine and transfer files from it to your own machine. You can obtain the IRG as a single file, but this file is so large that this would be impractical. However, you can use the Z and TAR commands to create a series of directories, each directory containing a chapter of the IRG.

The following dialog shows how to obtain the IRG through FTP, and how to build the manual in the UNIX environment by using the UNCOMPRESS and TAR commands.

The *INTERNET Resource Guide* hierarchy is available in both text (txt) and PostScript Printing (PS) formats. You may obtain either format or both formats at the same time. If you are not familiar with the document, it might be wise to begin with the text version and browse through it. If you have access to a PostScript printer, you can obtain the PS-format files later and print them if you wish.

You must begin by accessing the National Science Foundation machine through FTP and continue as shown. Text that you are to type is preceded by a pointing hand (☛).

```
gpu.utcs%                             ☛ ftp nnsc.nsf.ne <Return>
Connected to nnsc.nsf.net.
220 nnsc.nsf.net FTP server (Version 5.59 Mon May 14 13:48:21 EDT 1990) ready.
Name (nnsc.nsf.net:herb):             ☛ anonymous <Return>
331 Guest login ok, send ident as password.
Password:                             ☛ herb@gpu.utcs.utoronto.ca <Return> (Type your login id.)
230 Guest login ok, access restrictions apply.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp>                                  ☛ cd resource-guide <Return>
250 CWD command successful.
ftp>                                  ☛ get resource-guide.txt.tar.Z <Return>
200 PORT command successful.
150 Opening BINARY mode data connection for resource-guide.txt.tar.Z (171240
 bytes).
226 Transfer complete.
171240 bytes received in 55 seconds (3 Kbytes/s)
ftp>                                  ☛ bye <Return>
221 Goodbye.
gpu.utcs%                             ☛ uncompress  resource-guide.txt.tar.Z  <Return>
resource-guide.txt.tar already exists; do you wish to overwrite       (You see this message
 resource-guide.txt.tar (y or n)?     ☛ yes <Return>                      if you already have a
resource-guide.txt.tar.Z:  – replaced with resource-guide.txt.tar           copy of the IRG.)
```

```
gpu.utcs%                         ☛ tar -xvf resource-guide.txt.tar <Return>


x chapter.1/copyright.txt, 945 bytes, 2 tape blocks                 (Console
x chapter.1/intro.txt, 1972 bytes, 4 tape blocks                      output
x chapter.1/section1-1.txt, 3941 bytes, 8 tape blocks               from TAR
                                                                    command.)
      .
      .
      .
      .
      .
      .
x chapter.M/sectionM-7.txt, 2652 bytes, 6 tape blocks
x chapter.M/sectionM-8.txt, 3191 bytes, 7 tape blocks

gpu.utcs%                         ☛ ls -F <Return>        (Type this to see a listing of
chapter.1/                                             IRG directories on your machine.)
chapter.2/
chapter.3/
chapter.4/
chapter.5/
chapter.6/
chapter.M/
```

In the above, the UNCOMPRESS command restores a compressed file to its normal size. Generally, a compressed file is 40% to 60% smaller than the uncompressed version of the same file. Compressed filenames always end with the qualifier "Z". The UNCOMPRESS command replaces the compressed file with the uncompressed version of the same file. It gives the new file the same name as the old file, but removes the "Z" as you can see in the dialog above. This process is straightforward and should cause no difficulties.

The TAR command is trickier. Tar files are files that, in turn, contain multiple files, and possibly even multiple directories, files, and subdirectories. These, in turn, may contain even more files and subdirectories, and so on. You should be aware of what you might get before you issue the command. Look for the "readme" file associated with each tar file; this should tell you what to expect.

In the above, we used the TAR command with the options "xvf" which tell the TAR command to extract the named files ("x"), to be verbose about it ("v"), and to use the next argument ("f") as the name of the tar input file. In this case, the name was "resource-guide.txt.tar". This file was uncompressed and replaced by the file called "resource-guide.txt.tar.Z".

You should use all three arguments; the "v" option is especially useful. Normally the TAR command does its work without issuing any messages. If you run the TAR command this way, you can wind up with a large series of files, directories, subdirectories, and more files, and you may have to spend considerable time just figuring out what you have. You can use the SCRIPT command to obtain a log of what the TAR command does. You can use the UNIX MAN command to obtain online help for all UNIX commands, but the UNIX manual format often seems unfriendly to the beginning user. (The UNIX online help will be the subject of a future article.)

To obtain a log of what the TAR command did, begin by erasing any previous file you might have named "typescript". Next, issue the SCRIPT command and continue normally. When you are finished, press Control-D to obtain a log of what transpired. You will find this log in the "typescript" file. You can use this process for things other than logging the adventures of the TAR command. This procedure is highly recommended when you are doing anything complicated and want to go back and see what happened.

If you have any questions about any of the above, please contact *herb@gpu.utcs.utoronto.ca.*

Facilities Managed by UTCS

Administrative Computing
- administrative ORACLE, IMS, DB2, TS0, Batch
- 3081K processor, 48 megabytes of memory
- MVS/XA operating system

Computer Disciplines Facility/PC
- 88 NEC computers connected in a Local Area Network:
  - •Robarts Library (Rm. 1061A): 36 NEC PCs
  - •St. Michael's College (Rm. 107): 26 NEC PCs
  - •Sidney Smith (Rm. 1071): 23 NEC PCs
  - •Trinity College (Rm. 024): 3 NEC PCs
- MS-DOS with Turing environment
- introductory computer science

Computers in Quantitative and Empirical Science Teaching (CQUEST)
- 96 VXT2000 X-Window terminals connected in a Local Area Network to DEC 5000 stations, supported laser printers, and PC transfer stations:
  - •Ramsay Wright (Rm. 211, 213): 39 DEC VXT2000 terminals
  - •Sidney Smith (Rm. 2105): 31 DEC VXT2000 terminals
  - •Earth Sciences (Rm. 1046): 26 DEC VXT2000 terminals

Public Sites
- 50 XT100 terminals connected to PACX
  - •Robarts Library (Rm. 1061A): 24 terminals
  - •St. Michael's College (Rm. 107): 9 terminals
  - •Victoria College (1st floor): 3 terminals
  - •Trinity College (Rm. 024): 2 terminals

Erindale College Systems
Sun-3/280, 22 megabytes of memory
- instructional and research access using UNIX

VAX 8200, 8 megabytes of memory
- instructional access using VMS
- research access

•35 IBM PS/2 model 25 PCs
•30 IBM 3151 ASCII terminals
•8 Macintosh IIcx
•2 Novell Network file servers
•OMR scanner for multiple choice exams and surveys
•5 printers
•2 Macintosh SE computers
•1 PC/AT
•1 image scanner
•2 laser printers

UTCS Centrally Owned and Managed

Systems

IBM VM/CMS
Technical Assistance: 978-6602
- General Purpose Timesharing environment
- Hub of the NetNorth network with access to BITNET, EARN and the Internet
- 4381-R03 processor with 32 megabytes of memory
- CP operating system, VM/SP HPO R6
- CMS timesharing system, VM/SP Release 6
- FTP and TELNET access to the campus Ethernet, as well as Internet
- RSCS spooling system, Release 2.3

GP UNIX
Technical Assistance: 978-8853
- General Purpose Timesharing under Sun UNIX 4.1.1
- Sun-4/490, 32 megabytes of memory
- access to Linotronic typesetter
- full access to USENET, an electronic technical information exchange facility
- full access to the Internet, UUCPNET, BITNET, CDNNET

Services

Facility Management Support
Microcomputer Repairs: 978-1299
- Installs, maintains and upgrades microcomputer systems, particularly Macintoshes, IBM PCs and compatibles on a contract basis or on a cost-per-call basis.

Microcomputer Sales: 978-5050
- Provides institutional sales for approved personal computer equipment

Management and LOS Installation: 978-6545
- Provides management of computing facilities and local area networks for local office systems and undergraduate facilities
- Provides installation of local area networks for undergraduate facilities or local office systems, including the installation of UTCS-supported application and networking software.

Network Development & Support
Primary Phone: 978-7087
- Communications Group provides communications systems, modems, data channels: consulting and installation.
- provides access between the IBM systems and machines using UNIX, VMS, and other operating systems. Ethernet, and IBM TRN technologies are used over various transmission media including optical fibre. More basic communications techniques are also used for moderate speed links
- provides consulting on local area networking
- provides access to NetNorth (BITNET), the North American Universities Network; ONET, the Ontario Regional Network; CA*net, the Canadian National Network; and USENET, the UNIX networking fraternity
- will provide a communications solution to department needs on a contractual basis

User Support Services
Advising and Consulting
Primary Phone: 978-HELP
- The Advising and Consulting group is available to University faculty, staff, and graduate students.
- provides phone-in advising, and consultations by appointment for the following products:
  - operating systems: DOS, Macintosh System & Finder
  - packages and libraries: SAS, SPSS, SYSTAT
  - word processors: WordPerfect, Microsoft Word
  - databases: dBASE IV, FoxBASE
  - spreadsheet: Lotus 1-2-3, Microsoft Excel
  - file transfer: ProComm, MacKermit
  - electronic mail: QuickMail

Information Technology Support
Primary Phone: 978-5601
- selection consulting for hardware and software
- Micro Lab for evaluation of hardware and software
- CD-ROM access to software and information discs
- offers phototypesetting service

Administration and Information Services
Primary Phone: 978-4462
- administers Local Area Network of PCs for Education Facility
- administers Macintosh Education Facility
- administers site licences for various software packages
- provides short courses and seminars on the more popular services and software packages
- provides accounting services for all UTCS services
- provides accounting services for the University's telephone system on behalf of the Voice Communications Department
- produces *ComputerNews*, the *Computing & Communications Newsletter*, and assists in the production of the UTCC Annual Report

The mission of Computing and Communications (UTCC) is to provide services, facilities, and expertise that ensures that the University of Toronto is a leader in the cost-effective utilization, management and evolution of information technology in support of the research, teaching, library, and administrative goals of the University.

Consulting and Enquiries

Account & Access Code Enquiries	Jason Pante	BC101B	978-7148
Communication, Networking & Hardware	Rosi Derka-Tseu	BC105	978-7087
Erindale College	Joe Lim	ER2035	828-5311
IBM & Macintosh Maintenance	Rosi Derka-Tseu	BC103	978-1299
Information Office / Site Licences	Evelyn Ward	BC201	978-4990
Tape Library (Academic Services)	Susan Kovago	MP368	978-7319
Tape Library (Administrative Services)	Miranda Fong	MP368	978-6693
UTCS Noncredit Short Courses	Irene Rosiecki	BC217	978-4565

Consulting & Advising Services:	978-HELP
CMS, and GP UNIX userids:	ADVISOR
CMS Userid for mail problems:	POSTMSTR
Network Operations Centre	978-4621
System Status Enquiries (GP UNIX)	978-4318
System Status Enquiries (IBM)	978-7393
Interactive Services 300 (bps)	978-3959
Interactive Services 1200 (bps)	978-3959
Interactive Services 2400 (bps)	978-7239
Interactive Services 9600 (bps)	978-7220

UTCS Directory

Management Office General Enquiry				978-4462
Director:	Dr. Warren Jackson	BC118	978-8948	wcj@vm.utcs.utoronto.ca
Associate Director, Operations:	Eugene Siciunas	BC116	978-5058	eugene@vm.utcs.utoronto.ca
Managers:				
Computer & Network Operations Support	Dr. Bob Chambers	MP350	978-7092	bob@utcs.utoronto.ca
Systems Support	Bill Lauriston	MP350	978-3579	bill@utcs.utoronto.ca
Facility Management Support	Vera Cabanus	BC311A	978-7107	vcabanus@gpu.utcs.utoronto.ca
User Support Services	Don Gibson	BC312	978-7331	gibson@utcs.utoronto.ca
Network Development & Support	Norman Housley	BC121B	978-4967	norman@vm.utcs.utoronto.ca
Administration & Information Services	Ron Vander Kraats	BC121A	978-4428	rvk@vm.utcs.utoronto.ca

Legend:
BC = Bancroft Building
ER = Erindale
MP = McLennan Physical Labs

* NetNorth/BITNET/EARN

Names and Locations

Central Advising Office (CAO), 978-HELP
Earth Sciences Centre, 5 Bancroft Avenue, Room 1046
Erindale College (Erin), 828-5339, 3359 Mississauga Road North, Erindale Campus, Rooms 2037, 2045
Ramsay Wright, 25 Harbord St., Rooms 211, 213
Robarts, Robarts Library, 130 St. George St., Room 1061A
Sidney Smith (Sidney), 100 St. George St., Room 1071, 2105
St. Michael's College, 121 St. Joseph St., Room 107
Trinity College, 6 Hoskin Ave., Room 024
Victoria University, 73 Queen's Park Cres., 1st floor

Access Hours

Sites	Hours of Access				Restrictions*	Advising
	Mon-Thurs	Fri	Sat	Sun		
CAO	12:00-18:00	12:00-18:00	closed	closed	Research	978-HELP
Earth Sciences	7:00-22:00	7:00-22:00	TBA	TBA		
Erin (2045)	9:00-22:00	9:00-22:00	12:00-18:00	12:00-18:00	None	Rm 2005
Ramsay Wright	7:00-21:00	7:00-18:00	closed	closed	Undergrads	No
Robarts	8:30-24:00	8:30-24:00	9:00-22:00	13:00-22:00	None	978-HELP for Research
Sidney	7:00-24:00	7:00-24:00	7:00-24:00	7:00-24:00	None	978-HELP for Research
St. Michael's	24 hrs	24 hrs	24 hrs	24 hrs	None	978-HELP for Research
Trinity	8:00-22:00	8:00-22:00	8:00-22:00	8:00-22:00	None	978-HELP for Research
Victoria	8:30-21:00	8:30-21:00	8:00-13:00	8:00-13:00	None	978-HELP for Research

Sites	Advising Hours
CAO	Monday through Friday, 12:00 - 18:00
Erin	Monday through Friday, 09:00 - 22:00

* Research includes graduates, faculty, staff

Computer and Printer Access

Sites	PACX	CDF/PC	CQUEST	Printers
Erin	Y			Y*
Ramsay Wright			Y	Y**
Robarts	Y	Y		Y*
Sidney		Y	Y	Y**
St. Michael's	Y	Y		Y*
Trinity	Y	Y		
Victoria	Y			

(Y=yes, N=no)
*** Public Printers** ****Site Only**

UTCS administers a number of software site licences available to the University of Toronto community. (Usually, this means faculty, staff, and graduate students, though some licences apply to undergraduate students also. See "Restrictions" in the table below.) The licences provide a variety of software at much-reduced cost. The majority of the licences must be renewed each year. Most are terminated when you leave U of T.

Each licence has a contract that you must complete. It outlines your responsibilities and any limitations in the use of the software. All contracts and software are available from the UTCS Information Office, 4 Bancroft Avenue, Room 201. To qualify as a member of the U of T community, you must provide a valid Employee number or Student number.

The table below describes the available site licences. The Restrictions column specifies who may purchase the licence. If the restriction is Research, the payment must come from research money. The Diskettes/Distribution column describes how you actually receive the software. Large packages, like SAS and SPSS, require that you borrow the diskettes, install the software, and return the diskettes. Smaller packages, consisting of up to five diskettes, require you to bring your own diskettes.

For more detailed information about these site licences, telephone the UTCS Information Office at 978-4990.

Prices subject to change.

Site Licences at UTCS

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
Chaos in the Classroom I: Maps and Bifurcations					
PC	$12.00	Faculty, Staff, Graduate Students	One-time fee	One 5.25" or one 3.5"; bring own	Yes
CSLG					
There are over 250 individual software products included in this package.	$250.00	Departments with Digital hardware	One-time fee	Call 978-4595.	No
C++					
UNIX V, Release 2.1 Language System	$42.00	Faculty, Staff, Research	One-time fee	To purchase: call Evelyn Ward at 978-4990. Technical questions: Paul Kern at 978-4696.	No

***Documentation available at UTCS**

Site Licences at UTCS *cont.*

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
Maple (single machine or network server)					
DecStation 2100, 3100 (Ultrix)	$300.00	Staff	One-time fee	Borrow and return diskettes, tape cartridge; network download	Yes
DecStation 5000, 5100 (Ultrix)	$500.00				
DecStation 5400, 5800 (Ultrix)	$760.00				
HP 9000/300, HP 9000, 400 (HP-UX 7.0)	$300.00				
HP 9000/700, HP 9000, 800 (HP-UX 7.0)	$430.00				
Sun-3 (Sun OS 4.0)	$240.00				
Sun-4, SPARCstation (Sun OS 4.0)	$300.00				
SGI Personal IRIS (Irix)	$300.00				
SGI Professional IRIS 50-80GT (Irix)	$500.00				
SGI Professional IRIS 120-240GT (Irix)	$760.00				
PC-386 (DOS; UNIX)	$200.00				
MIPS, RC3230 (UNIX)	$300.00				
IBM RS6000 model 320 (AIX)	$300.00				
Macintosh (Finder)	$130.00				
Note: station cost is half the single machine price.					
Novell Netware 3.11 — 20-user Licence					
PC; LAN		University Depart-ments	One-time fee	Deposit $50; borrow and return diskettes	Yes
Server Licence:	$2506.00				
Upgrade Licence:	$1392.00				
Upgrade from Other Vendor's Software:	$2088.00				
Novell Netware 3.11 — 100-user Licence					
PC; LAN		University Depart-ments	One-time fee	Deposit $50; borrow and return diskettes	Yes
Server Licence:	$4873.00				
Upgrade Licence:	$2088.00				
Upgrade from Other Vendor's Software:	$3480.00				
Other Novell Products					
Mac Netware 3.0:	$438.00	University Depart-ments	One-time fee	Deposit $50; borrow and return diskettes	Yes
Novell Netware NFS	$1392.00				

***Documentation available at UTCS**

Site Licences at UTCS *cont.*

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
ProComm					
PC; Communications Note: Documentation on disk; part of package	Free	Faculty, Staff, Graduate Students, Undergraduate	N/A	Two 5.25"; bring own	Yes
QuickMail					
Mac; Electronic mail		Faculty, Staff	One-time fee	One 3.5"; bring own	No
Per user:	$35.00				
Upgrades:	$17.00				
SAS/PC					
PC; Statistical analysis		Faculty, Staff, Graduate Students, Undergraduate	July 1-June 30	Deposit per binder (Maximum $100); borrow and return diskettes	Yes
BASE/STAT/GRAPH/FSP:	$35.00				
IML module:	$31.00				
ETS module:	$31.00				
SAS/PC network					
PC; Statistical analysis		Faculty, Staff, Graduate Students	July 1-June 30	Deposit per binder (Maximum $100); borrow and return diskettes	Yes
Per station:	$17.00				
IML, ETS modules each per station	$16.00				
SAS/UNIX (Sun-3 & Sun-4)					
UNIX; Statistical analysis		Faculty, Staff, Graduate Students	July 1-June 30	Tape cartridge	Yes
Sun-3, Sun-4/1xxx and Sun-4/2xxx (all modules):	$388.00				
Sun-4/330:	$776.00				

***Documentation available at UTCS**

Site Licences at UTCS
cont.

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
SAS/UNIX (Sun-3 & Sun-4) Network					
UNIX; Statistical analysis Per server* (all modules): *Each server counts as 10 workunits regardless of the number of stations being served.	$3880.00	Faculty, Staff, Graduate Students	July 1- June 30	Tape cartridge	Yes
SPSS/PC					
PC; Statistical analysis Full Package: Data Entry Module Only:	$40.00 $20.00	Research	Nov 1- Oct 31	Deposit max. $50; borrow and return diskettes	No
SPSS/PC network					
PC; Statistical analysis Full Package: Data Entry Module Only:	$20.00 per station, plus server $10.00 per station, plus server	Research	Nov 1- Oct 31	Deposit max. $50; borrow and return diskettes	No
SYSTAT version 5.X					
Mac 5.2; DOS 5.0; Statistical analysis	$80.00	Faculty, Staff, Graduate Students	July 1- June 30	Six 800KB 3.5" diskettes; bring own	Yes
SYSTAT network version 5.1					
Mac; Statistical analysis Price per station, plus server:	$40.00	Faculty, Staff, Graduate Students	July 1- June 30	Six 800KB 3.5" diskettes; bring own	Yes

***Documentation available at UTCS**

Site Licences at UTCS *cont.*

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
UNIX V, Release 4					
Operating System	$18.00	Faculty, Staff, Research	One-time fee	*Send electronic mail to molnar@ gpu.utcs. utoronto.ca*	No
WATFOR-77					
PC; FORTRAN compiler [$35 WATFOR-87 (math co-processor)] GKS (Graphics Kernal System)	 $35.00 Add $5.00	Research	July 1- June 30	Two-three 5.25" diskettes; bring own	Yes
WordPerfect (individual & networked machines)					
PC; WordProcessing New, per machine: Upgrade, per machine:	 $42.00 $15.00	Faculty, Staff	One-time fee	Deposit $25; borrow and return diskettes	Yes

***Documentation available at UTCS**

PC Maintenance

Below is a listing of some microcomputer equipment which UTCS Micro Sales & Maintenance covers under yearly maintenance contracts. All contracts are based on a minimum 12 month period. Service calls are handled on a first-priority basis. Average response time is four hours. Equipment must be certified as operational prior to commencement of a maintenance contract. (There is no extra charge for this service.) Please contact UTCS Micro Sales & Maintenance at 978-5050 or 978-1299 to obtain service and pricing information.

IBM PC or Compatible Equipment

Systems
IBM PC PS/2 systems or compatibles
386, 486 systems
Notebooks
Laptops

Disk Drives
360KB & 1.2MB 5.25-inch Floppy
720KB & 1.4MB 3.5-inch Floppy

Hard Disk Drives
20 to 320 Megabyte

Displays
Monochrome
CGA / EGA / VGA Colour
PS/2 Monochrome/Colour
Most monitors

Modems
1200 & 2400 baud

Laser Printers
HP LaserJet
HP LaserJet II
PS Jet +
QMS PS 800
QMS PS 800+
QMS 810

Dot Matrix Printers
C-ITOH
Epson
IBM
NEC
Panasonic
Roland
Toshiba
Most makes

Apple Macintosh Equipment

Systems
Mac 128, 512, Plus
Mac Classic - All Models
Mac LC - All Models
Mac SE - All Models
Mac SE/30 - All Models
Mac II, IIx, IIcx, IIci, IIsi, IIfx
PowerBooks
Quadras

Disk Drives
400KB, 800KB 3.5-inch Floppy
1.4MB 3.5-inch Floppy

Hard Disk Drives
20 to 320 Megabyte

Displays
Apple Mac 12-inch Monochrome
Apple Mac 12-inch RGB
Apple High-Res 12-inch Monochrome
Apple High-Res 13-inch Colour

Modems
1200 & 2400 baud

Laser Printers
Personal LaserWriter LS
Personal LaserWriter NT
LaserWriter
LaserWriter Plus
LaserWriter IINT
LaserWriter IINTX

Dot Matrix Printers
ImageWriter I
ImageWriter II
ImageWriter II/L
Apple StyleWriter

UTCS also supplies and installs floppy disk drives, hard disk drives, video and other boards, math coprocessors, and memory upgrades.

Support for UNIX

We support timesharing on GP UNIX under Sun OS 4.1.1.

Support for VM/CMS

We support CMS release 6.0 under CP/HPO release 6.0. For CMS support, call Supervisor Ted Sikorski at 978-6602.

Support by UTCS Advising

The following are microcomputer software packages supported by the UTCS Advising and Consulting Group. This service is available to University of Toronto faculty, staff, and graduate students. For assistance with the products listed below, call 978-HELP, Monday through Friday, between 12:00 noon and 6:00 p.m.

Package/Compiler	Version	Environment
Communications		
File Transfer & Terminal Emulators		
MacKermit	0.99(94)	Macintosh
ProComm	TU 2.4.2	MS-DOS
Database Managers		
dBASE IV	1.5	MS-DOS
FoxBASE Mac	2.01	Macintosh
Electronic Mail		
QuickMail	2.2.3	Macintosh
Operating Systems		
IBM PC & Compatibles		
Microsoft MS-DOS (incl. IBM PC-DOS)	5.0	n/a
Macintosh		
Finder	6.0.X	n/a
MultiFinder	6.0.X	n/a
System	6.0.X	n/a
Spreadsheet & Charting		
Lotus 1-2-3	2.02	MS-DOS
Microsoft Excel	2.2a, 3.0	Macintosh
Statistical		
SAS/PC	6.04	MS-DOS
SPSS/PC+	4.0	MS-DOS
SYSTAT	5.1	Macintosh
SYSTAT	5.03	MS-DOS
SAS	5.18, 6.07*	VM/CMS
SPSS	3.1, 4.1	VM/CMS
SAS	6.03, 6.07	UNIX, Sun-3, Sun-4
Word Processing		
Microsoft Word	4.0	Macintosh
WordPerfect	5.1	MS-DOS

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